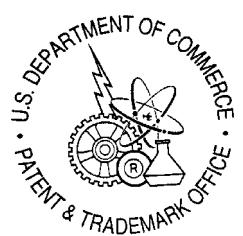


ALL TECHNOLOGIES REPORT

JANUARY 1963 -- JUNE 1997



August 1997

U.S. PATENT AND TRADEMARK OFFICE
OFFICE OF ELECTRONIC INFORMATION PRODUCTS / TAF PROGRAM
PK3 - Suite 441, WASHINGTON, DC 20231
tel (703) 306-2600 / FAX (703) 306-2737

A TECHNOLOGY ASSESSMENT AND FORECAST REPORT

All Technologies Report

1/1963 - 6/1997

Explanation of Data

This Technology Assessment and Forecast (TAF) Program Report profiles patent activity for U.S. patents granted between 1963 and **JUNE 1997** in all technology areas, i.e., for all utility patents. The source of the data used for this report is the TAF data base maintained by the Office of Electronic Information Products.

Data Distribution By Date of Grant and By Date of Application

Parts A1 and A2

Part A1 distributes utility patent GRANT data by year of patent grant ("Patents Granted By Date of Patent Grant"). Part A2 distributes grant data by the year in which the patented application was filed ("Patents Granted By Date of Patent Application"). Parts A1 and A2 each provide patent counts (pages A1-1 and A2-1) and percent distributions (pages A1-2 and A2-2).

Patent data, as shown in the "**Pre 1984**" column, corresponds to the period 1963 through **1983**.

Part B

Part B of this report distributes patent GRANT data for organizations that have received U.S. patents since 1969. Data are presented by the year in which the patent was granted ("Patents By Year of Grant") and the year the patented application was filed ("Patents by Year of Application").

DATA FOR THOSE APPLICATIONS WHICH WERE FILED BUT NEVER ISSUED (ROUGHLY 37% OF TOTAL FILINGS) ARE NOT INCLUDED IN THIS REPORT.

Since the average time period between filing for a utility patent and the issuing of the patent (i.e., the patent's "pendency") is now about 21 months, the patented application data for applications filed from **1993 to JUNE 1997** are incomplete.* This is because a significant number of the applications filed from **1993 to JUNE 1997** which will ultimately become patents were still pending in **JUNE 1997**. Since they had not yet become patents at the time this report was prepared, they were not included in this report.

Patented application data are of significant value since the date an application was filed more accurately reflects when the technology was developed. Additionally, fluctuations in data based on application date are much more likely to reflect changes in technological activity since, for the most part, such fluctuations would be immune from changes in U.S. Patent and Trademark Office (PTO) processing such as occurred in 1986 when the PTO issued fewer patents than would have normally been expected due to a lack of funds to print patents. Note that a patent's "pendency" can be quite variable from one patent to another thereby affecting the date of patent grant. Such variation in

pendency is determined by many factors, including PTO workload (which varies between technologies), budget and manpower levels, patent printing schedules, etc.

"**Patents Granted By Date of Patent Application**", as shown in the "**Pre 1984**" column, correspond to utility patent grants in the report which were filed prior to **1984**.

Parts of the Report

Parts A1 and A2 present tables which show, by number and percent, the patent activity in all technologies. Part A1 presents data by year of patent grant ("Patents Granted By Date of Patent Grant"). Part A2 redistributes grant data by year of patent application ("Patents Granted By Date of Patent Application"). The location of patent origin is determined by the residence of the first-named inventor at the time of grant.

Patent ownership information reflects ownership at the time of patent grant and does not include subsequent changes in ownership. If more than one assignee was declared at the time of grant, the patent is attributed to the first-named assignee. The U.S. and Foreign Corporations ownership categories count predominantly corporate patents; however, patents assigned to other organizations such as small businesses, nonprofit organizations, universities, etc. are also included in this category. While U.S. Government patent ownership includes only patents granted to the Federal Government, no such distinction is made for Foreign Government patents.

Part B is a ranked listing of national and international organizations (i.e., corporations, universities, government agencies) which have received 1000 or more U.S. utility patents since 1969. Data line 1 for each listed organization distributes counts of patent grants by year of grant. Data line 2 for each organization redistributes those same patent grants by year in which the patented applications were filed. Information on patent ownership reflects ownership at the time of patent grant. Although a substantial effort has been made to combine name variations into a single organizational name, many organizations continue to have patents listed under more than one organizational name.

Note: A report titled Industrial Patent Activity in the United States is a more extensive version of Part B of this report. That report, which currently shows organizations granted 15 or more patents during the period 1972 to 1996, is available from the National Technical Information Service (703-487-4650).

* As of **JUNE 1997**, utility patent application data are approximately 95% complete for utility patent applications filed in 1993, 90% complete for applications filed in 1994, 53% complete for applications filed in 1995, and 6% complete for applications filed in 1996. They are essentially complete for applications filed prior to 1993.

Part A1

(Patent Grants as Distributed By Date of Patent Grant)

Part A2

(Patent Grants as Distributed By Date of Patent Application)

Part B

**Ranked Listing of Organizations with PATENT GRANTS
As Distributed By Year of Patent Grant
and As Distributed By Year of Patent Application**

----- Organizational Patenting

(Granted: Jan 01, 1969 - Jun 30, 1997) ----- Ranked List of Organizations with 1000 or More Patents -----

| | Pre 1984 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | TOTAL |
|--|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
|--|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|

GENERAL ELECTRIC COMPANY

| | | | | | | | | | | | | | | | | |
|---------------------------------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| Patents By Year of Grant: | 13196 | 789 | 778 | 714 | 779 | 689 | 819 | 787 | 809 | 937 | 932 | 970 | 758 | 819 | 302 | 24078 |
| Patents By Year of Application: | 14749 | 726 | 696 | 664 | 707 | 781 | 820 | 896 | 872 | 939 | 849 | 830 | 500 | 49 | 0 | 24078 |

INTERNATIONAL BUSINESS MACHINES CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|-----|-------|
| Patents By Year of Grant: | 7891 | 609 | 578 | 598 | 591 | 549 | 623 | 609 | 679 | 842 | 1085 | 1298 | 1383 | 1867 | 857 | 20059 |
| Patents By Year of Application: | 9307 | 487 | 509 | 547 | 541 | 636 | 708 | 870 | 1208 | 1432 | 1127 | 1478 | 1094 | 115 | 0 | 20059 |

HITACHI, LTD

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|-----|-------|
| Patents By Year of Grant: | 4668 | 596 | 693 | 731 | 845 | 908 | 1054 | 908 | 927 | 956 | 913 | 976 | 910 | 963 | 438 | 16486 |
| Patents By Year of Application: | 6250 | 682 | 720 | 827 | 924 | 1051 | 1061 | 1015 | 988 | 877 | 845 | 782 | 430 | 34 | 0 | 16486 |

AT&T CORP.

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-------|
| Patents By Year of Grant: | 8179 | 488 | 546 | 437 | 406 | 375 | 387 | 430 | 484 | 440 | 448 | 595 | 638 | 510 | 22 | 14385 |
| Patents By Year of Application: | 9335 | 386 | 361 | 360 | 308 | 335 | 509 | 492 | 461 | 563 | 687 | 468 | 117 | 3 | 0 | 14385 |

CANON KABUSHIKI KAISHA

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|-----|-------|
| Patents By Year of Grant: | 2210 | 430 | 427 | 523 | 846 | 723 | 954 | 870 | 827 | 1109 | 1037 | 1096 | 1087 | 1541 | 642 | 14322 |
| Patents By Year of Application: | 3155 | 585 | 652 | 787 | 710 | 813 | 960 | 989 | 1156 | 1176 | 1137 | 1288 | 842 | 72 | 0 | 14322 |

TOSHIBA CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|-----|-----|-----|-----|-----|------|------|------|------|------|-----|-----|-----|-----|-------|
| Patents By Year of Grant: | 2357 | 543 | 698 | 694 | 824 | 751 | 962 | 893 | 1014 | 1023 | 1039 | 968 | 969 | 914 | 425 | 14074 |
| Patents By Year of Application: | 3796 | 616 | 661 | 693 | 823 | 961 | 1011 | 1038 | 1179 | 922 | 860 | 956 | 510 | 48 | 0 | 14074 |

EASTMAN KODAK COMPANY

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|-------|
| Patents By Year of Grant: | 5302 | 255 | 223 | 229 | 296 | 433 | 589 | 721 | 863 | 775 | 1007 | 888 | 772 | 768 | 338 | 13459 |
| Patents By Year of Application: | 5733 | 174 | 289 | 346 | 459 | 696 | 833 | 906 | 922 | 1011 | 751 | 700 | 508 | 131 | 0 | 13459 |

U.S. PHILIPS CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| Patents By Year of Grant: | 5615 | 438 | 466 | 503 | 687 | 581 | 746 | 637 | 650 | 501 | 441 | 396 | 504 | 477 | 223 | 12865 |
| Patents By Year of Application: | 6651 | 474 | 534 | 600 | 569 | 654 | 667 | 553 | 491 | 430 | 428 | 505 | 278 | 31 | 0 | 12865 |

E. I. DU PONT DE NEMOURS AND COMPANY

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| Patents By Year of Grant: | 6870 | 348 | 342 | 329 | 419 | 375 | 443 | 481 | 597 | 599 | 568 | 486 | 441 | 395 | 134 | 12827 |
| Patents By Year of Application: | 7502 | 322 | 380 | 394 | 406 | 434 | 573 | 639 | 550 | 497 | 441 | 392 | 273 | 24 | 0 | 12827 |

WESTINGHOUSE ELECTRIC CORP.

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-------|
| Patents By Year of Grant: | 7176 | 348 | 372 | 398 | 652 | 434 | 452 | 436 | 354 | 358 | 276 | 248 | 170 | 132 | 36 | 11842 |
| Patents By Year of Application: | 7983 | 455 | 454 | 390 | 392 | 445 | 403 | 375 | 305 | 228 | 193 | 168 | 49 | 2 | 0 | 11842 |

SIEMENS AKTIENGESELLSCHAFT

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| Patents By Year of Grant: | 5564 | 406 | 418 | 410 | 539 | 562 | 658 | 508 | 475 | 398 | 371 | 376 | 419 | 418 | 214 | 11736 |
| Patents By Year of Application: | 6472 | 366 | 453 | 528 | 528 | 544 | 463 | 458 | 378 | 403 | 394 | 425 | 287 | 37 | 0 | 11736 |

---- Organizational Patenting

(Granted: Jan 01, 1969 - Jun 30, 1997) ---- Ranked List of Organizations with 1000 or More Patents ----

Pre 1984 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 TOTAL

RCA CORPORATIONPatents By Year of Grant: 5885 429 454 484 504 129 2 0 1 0 0 0 0 0 0 0 0 0 0 7888
Patents By Year of Application: 6839 379 394 237 38 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 7888**MINNESOTA MINING AND MANUFACTURING COMPANY**Patents By Year of Grant: 2762 193 228 232 256 279 381 323 365 388 414 519 564 537 254 7695
Patents By Year of Application: 3183 203 261 265 320 359 320 402 410 444 518 578 386 46 0 7695**SONY CORPORATION**Patents By Year of Grant: 1793 204 238 227 332 303 320 238 299 419 565 656 754 855 380 7583
Patents By Year of Application: 2326 210 274 275 260 295 300 384 549 690 677 791 497 55 0 7583**TEXAS INSTRUMENTS, INCORPORATED**Patents By Year of Grant: 2655 169 194 178 277 195 400 285 373 394 369 479 527 600 332 7427
Patents By Year of Application: 3112 238 190 194 261 358 344 395 395 406 479 599 429 27 0 7427**BASF AKTIENGESELLSCHAFT**Patents By Year of Grant: 3092 260 265 250 263 297 354 394 384 396 360 318 301 317 134 7385
Patents By Year of Application: 3588 251 270 248 328 389 388 382 340 311 321 305 233 31 0 7385**PHILLIPS PETROLEUM COMPANY**Patents By Year of Grant: 4837 279 291 222 206 153 142 131 157 171 193 149 101 91 34 7157
Patents By Year of Application: 5352 256 240 147 116 126 127 181 168 169 113 89 70 3 0 7157**HOECHST AKTIENGESELLSCHAFT**Patents By Year of Grant: 3334 223 237 231 234 227 260 282 282 331 356 335 311 351 159 7153
Patents By Year of Application: 3794 209 249 237 233 298 299 282 294 358 318 322 247 13 0 7153**UNITED STATES OF AMERICA, ARMY**Patents By Year of Grant: 4721 187 205 198 169 104 163 132 171 144 153 186 172 137 89 6931
Patents By Year of Application: 5181 175 136 112 93 124 155 139 148 178 176 167 124 23 0 6931**MOBIL OIL CORP.**Patents By Year of Grant: 2803 373 351 341 292 248 376 355 366 299 284 286 202 167 58 6801
Patents By Year of Application: 3452 343 303 231 335 347 363 309 322 276 231 192 93 4 0 6801**ROBERT BOSCH GMBH**Patents By Year of Grant: 2588 295 314 241 262 223 200 204 261 278 363 316 312 306 116 6279
Patents By Year of Application: 3194 228 243 208 186 165 249 285 330 371 295 323 178 24 0 6279**FUJITSU LIMITED**Patents By Year of Grant: 765 179 183 204 241 245 283 261 358 412 452 592 724 869 460 6228
Patents By Year of Application: 1238 174 184 194 242 261 356 431 538 579 638 814 505 74 0 6228

----- Organizational Patenting

(Granted: Jan 01, 1969 - Jun 30, 1997) ----- Ranked List of Organizations with 1000 or More Patents -----

Pre 1984 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 TOTAL

RICOH COMPANY, LTD.

Patents By Year of Grant: 1336 123 143 199 205 180 274 293 314 360 287 304 273 295 175 4761
Patents By Year of Application: 1654 154 181 183 184 306 333 382 305 315 283 293 169 19 0 4761

SHARP KABUSHIKI KAISHA

Patents By Year of Grant: 531 111 123 189 284 237 339 350 385 393 373 454 388 352 189 4698
Patents By Year of Application: 867 157 245 243 238 366 387 390 426 440 391 332 201 15 0 4698

AMERICAN CYANAMID COMPANY

Patents By Year of Grant: 3114 111 115 92 107 101 114 136 106 126 135 148 98 106 54 4663
Patents By Year of Application: 3338 135 97 111 110 100 86 129 122 129 135 85 85 1 0 4663

ROCKWELL INTERNATIONAL CORPORATION

Patents By Year of Grant: 2707 196 208 161 158 134 123 115 152 124 136 150 117 119 46 4646
Patents By Year of Application: 3207 106 128 128 110 118 148 125 146 133 131 102 60 4 0 4646

TOYOTA JIDOSHA K.K.

Patents By Year of Grant: 1800 239 256 228 376 306 274 152 149 149 145 132 156 158 91 4611
Patents By Year of Application: 2268 224 295 357 238 173 152 160 138 155 150 155 117 29 0 4611

UNION CARBIDE CORPORATION

Patents By Year of Grant: 3428 231 242 208 159 141 132 43 8 0 0 0 0 0 0 4592
Patents By Year of Application: 3870 200 181 138 107 64 32 0 0 0 0 0 0 0 0 4592

HONDA GIKEN KOGYO KABUSHIKI KAISHA (HONDA MOTOR CO., LTD.)

Patents By Year of Grant: 686 193 309 280 395 365 352 365 244 195 243 223 248 293 180 4571
Patents By Year of Application: 1208 249 329 345 361 339 316 184 217 251 239 285 216 32 0 4571

HEWLETT-PACKARD COMPANY

Patents By Year of Grant: 799 63 56 77 130 153 242 218 318 344 338 428 470 501 236 4373
Patents By Year of Application: 933 89 81 156 206 221 332 336 392 405 428 461 290 43 0 4373

UNITED STATES OF AMERICA, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patents By Year of Grant: 2510 136 144 93 122 93 127 128 151 151 166 160 122 104 39 4246
Patents By Year of Application: 2774 100 105 93 96 145 139 137 170 156 165 107 54 5 0 4246

UOP

Patents By Year of Grant: 2869 132 99 63 73 68 161 120 99 103 115 103 109 97 29 4240
Patents By Year of Application: 3053 90 67 80 127 137 94 99 98 124 95 124 50 2 0 4240

TEXACO INC.

Patents By Year of Grant: 2618 196 183 140 146 96 126 115 100 107 109 87 107 65 9 4204
Patents By Year of Application: 2955 155 131 128 111 104 95 113 110 101 93 80 28 0 0 4204

ALL TECHNOLOGIES REPORT (PARTS A1, A2, B)

----- Technology Assessment and Forecast Report -----

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----- Organizational Patenting

(Granted: Jan 01, 1969 - Jun 30, 1997) ---- Ranked List of Organizations with 1000 or More Patents ----

ALL TECHNOLOGIES REPORT (PARTS A1, A2, B)

----- Technology Assessment and Forecast Report -----

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----- Organizational Patenting

(Granted: Jan 01, 1969 - Jun 30, 1997) ---- Ranked List of Organizations with 1000 or More Patents ----

---- Organizational Patenting

(Granted: Jan 01, 1969 - Jun 30, 1997) ---- Ranked List of Organizations with 1000 or More Patents ----

| | Pre 1984 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | TOTAL |
|--|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
|--|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|

SANDOZ LTD.

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 910 | 56 | 45 | 42 | 51 | 53 | 60 | 35 | 52 | 41 | 47 | 43 | 44 | 84 | 40 | 1603 |
| Patents By Year of Application: | 1023 | 43 | 44 | 49 | 48 | 48 | 43 | 46 | 49 | 39 | 46 | 59 | 64 | 2 | 0 | 1603 |

BAXTER INTERNATIONAL INC.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 731 | 65 | 41 | 44 | 67 | 63 | 87 | 64 | 70 | 59 | 65 | 75 | 61 | 70 | 30 | 1592 |
| Patents By Year of Application: | 861 | 46 | 44 | 71 | 68 | 70 | 72 | 57 | 60 | 65 | 75 | 66 | 36 | 1 | 0 | 1592 |

OWENS-CORNING FIBERGLAS CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|----|----|----|----|----|----|----|----|----|---|---|---|---|---|------|
| Patents By Year of Grant: | 1195 | 76 | 93 | 57 | 46 | 35 | 37 | 17 | 15 | 15 | 2 | 1 | 0 | 0 | 1 | 1590 |
| Patents By Year of Application: | 1331 | 79 | 53 | 36 | 29 | 30 | 10 | 16 | 4 | 1 | 0 | 0 | 1 | 0 | 0 | 1590 |

TEKTRONIX INC.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 437 | 35 | 88 | 91 | 137 | 173 | 143 | 91 | 80 | 66 | 59 | 39 | 60 | 61 | 28 | 1588 |
| Patents By Year of Application: | 586 | 88 | 96 | 164 | 119 | 111 | 96 | 66 | 64 | 58 | 47 | 51 | 41 | 1 | 0 | 1588 |

NATIONAL SEMICONDUCTOR CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|----|------|
| Patents By Year of Grant: | 328 | 41 | 35 | 35 | 41 | 34 | 60 | 59 | 95 | 103 | 119 | 149 | 186 | 201 | 95 | 1581 |
| Patents By Year of Application: | 406 | 37 | 32 | 27 | 51 | 58 | 85 | 110 | 110 | 155 | 153 | 194 | 147 | 16 | 0 | 1581 |

SANYO ELECTRIC CO., LTD.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|------|
| Patents By Year of Grant: | 233 | 37 | 36 | 73 | 96 | 80 | 96 | 111 | 133 | 117 | 119 | 123 | 115 | 130 | 78 | 1577 |
| Patents By Year of Application: | 322 | 46 | 95 | 72 | 82 | 113 | 127 | 135 | 112 | 102 | 141 | 144 | 78 | 8 | 0 | 1577 |

DRESSER INDUSTRIES, INC.

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 1025 | 63 | 84 | 65 | 69 | 49 | 40 | 25 | 36 | 28 | 20 | 22 | 12 | 14 | 14 | 1566 |
| Patents By Year of Application: | 1175 | 52 | 64 | 45 | 44 | 36 | 18 | 39 | 24 | 18 | 13 | 22 | 15 | 1 | 0 | 1566 |

CHRYSLER MOTORS CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|-----|----|-----|----|----|-----|-----|-----|-----|----|------|
| Patents By Year of Grant: | 462 | 7 | 19 | 38 | 77 | 65 | 89 | 113 | 89 | 49 | 66 | 101 | 116 | 152 | 63 | 1506 |
| Patents By Year of Application: | 481 | 20 | 54 | 70 | 65 | 112 | 92 | 84 | 54 | 89 | 113 | 145 | 108 | 19 | 0 | 1506 |

INSTITUT FRANCAIS DU PETROLE

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 654 | 42 | 44 | 35 | 55 | 63 | 64 | 72 | 82 | 56 | 71 | 89 | 73 | 69 | 35 | 1504 |
| Patents By Year of Application: | 745 | 38 | 60 | 58 | 52 | 69 | 71 | 68 | 63 | 84 | 82 | 66 | 47 | 1 | 0 | 1504 |

L'OREAL S.A.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|-----|----|-----|----|------|
| Patents By Year of Grant: | 554 | 39 | 40 | 32 | 51 | 47 | 92 | 74 | 85 | 71 | 79 | 70 | 72 | 126 | 69 | 1501 |
| Patents By Year of Application: | 656 | 39 | 40 | 53 | 72 | 80 | 68 | 67 | 75 | 67 | 75 | 107 | 95 | 7 | 0 | 1501 |

ALUMINUM COMPANY OF AMERICA

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 680 | 52 | 62 | 75 | 80 | 74 | 61 | 60 | 67 | 52 | 64 | 57 | 44 | 53 | 17 | 1498 |
| Patents By Year of Application: | 775 | 78 | 83 | 78 | 67 | 63 | 63 | 54 | 61 | 46 | 55 | 46 | 28 | 1 | 0 | 1498 |

----- Organizational Patenting -----

(Granted: Jan 01, 1969 - Jun 30, 1997) ----- Ranked List of Organizations with 1000 or More Patents -----

| | Pre 1984 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | TOTAL |
|--|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
|--|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|

HARRIS CORP.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 601 | 44 | 51 | 54 | 89 | 51 | 73 | 73 | 58 | 59 | 62 | 66 | 69 | 91 | 51 | 1492 |
| Patents By Year of Application: | 724 | 46 | 71 | 53 | 57 | 65 | 64 | 59 | 73 | 79 | 49 | 90 | 59 | 3 | 0 | 1492 |

FUJI XEROX CO., LTD.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|-----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|----|------|
| Patents By Year of Grant: | 139 | 92 | 103 | 52 | 34 | 41 | 43 | 57 | 73 | 116 | 137 | 159 | 182 | 172 | 87 | 1487 |
| Patents By Year of Application: | 350 | 41 | 30 | 26 | 54 | 62 | 66 | 136 | 127 | 157 | 173 | 143 | 111 | 11 | 0 | 1487 |

HERCULES INCORPORATED

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 946 | 39 | 41 | 43 | 50 | 32 | 47 | 35 | 63 | 38 | 30 | 33 | 25 | 41 | 10 | 1473 |
| Patents By Year of Application: | 1015 | 43 | 42 | 45 | 43 | 50 | 47 | 47 | 37 | 31 | 20 | 36 | 15 | 2 | 0 | 1473 |

KIMBERLY-CLARK CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|----|------|
| Patents By Year of Grant: | 504 | 33 | 30 | 60 | 93 | 76 | 91 | 69 | 42 | 58 | 47 | 65 | 80 | 141 | 76 | 1465 |
| Patents By Year of Application: | 569 | 55 | 83 | 92 | 78 | 63 | 56 | 63 | 43 | 59 | 80 | 117 | 100 | 7 | 0 | 1465 |

UNION OIL COMPANY OF CALIFORNIA

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|------|
| Patents By Year of Grant: | 682 | 53 | 69 | 69 | 59 | 70 | 75 | 57 | 91 | 88 | 54 | 47 | 27 | 11 | 8 | 1460 |
| Patents By Year of Application: | 810 | 66 | 78 | 63 | 54 | 72 | 79 | 71 | 64 | 50 | 33 | 16 | 4 | 0 | 0 | 1460 |

HENKEL KOMMANDITGESELLSCHAFT AUF AKTIEN(HENKEL KGAA)

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|-----|-----|-----|-----|----|----|----|-----|-----|-----|----|------|
| Patents By Year of Grant: | 309 | 52 | 68 | 58 | 89 | 103 | 130 | 117 | 65 | 44 | 68 | 101 | 100 | 108 | 34 | 1446 |
| Patents By Year of Application: | 411 | 65 | 90 | 90 | 125 | 129 | 87 | 34 | 58 | 90 | 87 | 115 | 59 | 6 | 0 | 1446 |

BRIDGESTONE CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|------|
| Patents By Year of Grant: | 433 | 43 | 49 | 53 | 51 | 79 | 90 | 83 | 75 | 90 | 98 | 93 | 92 | 73 | 28 | 1430 |
| Patents By Year of Application: | 517 | 48 | 58 | 58 | 92 | 90 | 83 | 91 | 97 | 102 | 66 | 72 | 52 | 4 | 0 | 1430 |

NIPPON STEEL CORP.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 553 | 57 | 42 | 53 | 48 | 54 | 78 | 57 | 62 | 74 | 80 | 79 | 84 | 72 | 33 | 1426 |
| Patents By Year of Application: | 651 | 45 | 44 | 55 | 58 | 61 | 49 | 96 | 89 | 76 | 78 | 69 | 51 | 4 | 0 | 1426 |

SHIN ETSU CHEMICAL CO., LTD.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|----|------|
| Patents By Year of Grant: | 209 | 12 | 28 | 40 | 50 | 63 | 52 | 63 | 113 | 134 | 166 | 159 | 142 | 132 | 48 | 1411 |
| Patents By Year of Application: | 239 | 30 | 45 | 60 | 49 | 61 | 105 | 144 | 123 | 153 | 144 | 156 | 96 | 6 | 0 | 1411 |

ASAHI KASEI KOGYO KABUSHIKI KAISHA

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 765 | 73 | 69 | 48 | 51 | 53 | 52 | 38 | 33 | 34 | 57 | 54 | 34 | 29 | 17 | 1407 |
| Patents By Year of Application: | 899 | 55 | 52 | 50 | 48 | 41 | 48 | 33 | 52 | 39 | 33 | 38 | 14 | 5 | 0 | 1407 |

COMBUSTION ENGINEERING INC.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|------|
| Patents By Year of Grant: | 842 | 76 | 71 | 60 | 59 | 44 | 35 | 21 | 18 | 19 | 48 | 59 | 26 | 19 | 9 | 1406 |
| Patents By Year of Application: | 991 | 62 | 46 | 45 | 36 | 28 | 16 | 18 | 22 | 64 | 45 | 27 | 6 | 0 | 0 | 1406 |

---- Organizational Patenting

(Granted: Jan 01, 1969 - Jun 30, 1997) ---- Ranked List of Organizations with 1000 or More Patents ----

| | Pre 1984 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | TOTAL |
|--|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
|--|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|

CARRIER CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 705 | 47 | 61 | 36 | 33 | 44 | 48 | 48 | 72 | 56 | 51 | 57 | 59 | 50 | 19 | 1386 |
| Patents By Year of Application: | 799 | 36 | 38 | 45 | 40 | 43 | 53 | 63 | 62 | 44 | 61 | 62 | 37 | 3 | 0 | 1386 |

USX CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|----|----|----|----|---|---|---|---|---|---|---|---|----|---|------|
| Patents By Year of Grant: | 1264 | 25 | 25 | 23 | 12 | 5 | 5 | 1 | 3 | 4 | 4 | 2 | 3 | 10 | 0 | 1386 |
| Patents By Year of Application: | 1312 | 19 | 13 | 6 | 4 | 6 | 1 | 1 | 7 | 4 | 1 | 8 | 4 | 0 | 0 | 1386 |

ALPS ELECTRIC CO., LTD.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 222 | 54 | 64 | 100 | 152 | 198 | 138 | 90 | 83 | 78 | 46 | 36 | 42 | 39 | 30 | 1372 |
| Patents By Year of Application: | 362 | 98 | 89 | 174 | 152 | 102 | 94 | 70 | 60 | 46 | 40 | 49 | 31 | 5 | 0 | 1372 |

SCHLUMBERGER TECHNOLOGY CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 673 | 38 | 53 | 39 | 43 | 38 | 68 | 63 | 58 | 50 | 57 | 66 | 49 | 56 | 17 | 1368 |
| Patents By Year of Application: | 783 | 44 | 33 | 34 | 40 | 44 | 68 | 70 | 60 | 51 | 53 | 59 | 24 | 5 | 0 | 1368 |

SUNDSTRAND CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|-----|-----|-----|-----|-----|----|----|----|----|----|------|
| Patents By Year of Grant: | 216 | 31 | 53 | 80 | 89 | 82 | 132 | 157 | 196 | 120 | 66 | 57 | 30 | 45 | 11 | 1365 |
| Patents By Year of Application: | 311 | 64 | 84 | 87 | 98 | 156 | 226 | 130 | 68 | 48 | 49 | 30 | 13 | 1 | 0 | 1365 |

ILLINOIS TOOL WORKS INC.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 736 | 34 | 47 | 40 | 37 | 37 | 21 | 39 | 44 | 53 | 72 | 34 | 56 | 72 | 36 | 1358 |
| Patents By Year of Application: | 819 | 36 | 27 | 33 | 29 | 24 | 36 | 59 | 51 | 59 | 50 | 76 | 48 | 11 | 0 | 1358 |

INTERNATIONAL FLAVORS + FRAGRANCES INC

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|-----|----|----|----|----|----|----|----|----|----|----|----|---|------|
| Patents By Year of Grant: | 773 | 95 | 104 | 76 | 38 | 24 | 31 | 40 | 38 | 25 | 25 | 30 | 25 | 19 | 5 | 1348 |
| Patents By Year of Application: | 903 | 96 | 65 | 35 | 25 | 30 | 34 | 31 | 31 | 16 | 35 | 28 | 15 | 4 | 0 | 1348 |

MITSUI TOATSU CHEMICALS INC.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|----|----|----|------|
| Patents By Year of Grant: | 269 | 33 | 36 | 28 | 44 | 64 | 78 | 94 | 88 | 130 | 139 | 118 | 95 | 79 | 36 | 1331 |
| Patents By Year of Application: | 334 | 32 | 38 | 61 | 77 | 81 | 115 | 119 | 106 | 118 | 103 | 83 | 58 | 6 | 0 | 1331 |

BORG-WARNER CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|------|----|----|----|----|---|---|---|---|---|---|---|---|---|---|------|
| Patents By Year of Grant: | 1128 | 46 | 70 | 35 | 26 | 5 | 4 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1320 |
| Patents By Year of Application: | 1241 | 43 | 20 | 9 | 3 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1320 |

MITSUBISHI JUKOGYO KABUSHIKI KAISHA

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 466 | 44 | 27 | 51 | 88 | 59 | 59 | 65 | 62 | 85 | 85 | 69 | 65 | 61 | 24 | 1310 |
| Patents By Year of Application: | 530 | 47 | 70 | 72 | 54 | 53 | 79 | 60 | 101 | 80 | 58 | 57 | 47 | 2 | 0 | 1310 |

NALCO CHEMICAL COMPANY

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 626 | 32 | 32 | 26 | 50 | 52 | 55 | 54 | 49 | 69 | 59 | 71 | 69 | 30 | 20 | 1294 |
| Patents By Year of Application: | 673 | 30 | 33 | 42 | 70 | 57 | 52 | 50 | 66 | 65 | 73 | 44 | 36 | 3 | 0 | 1294 |

---- Technology Assessment and Forecast Report ----

ALL TECHNOLOGIES REPORT (PARTS A1, A2, B)

Page B - 20

---- Organizational Patenting

(Granted: Jan 01, 1969 - Jun 30, 1997) ---- Ranked List of Organizations with 1000 or More Patents ----

| | Pre 1984 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | TOTAL |
|--|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
|--|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|

RAYCHEM CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 309 | 47 | 60 | 53 | 83 | 58 | 96 | 57 | 57 | 53 | 39 | 35 | 39 | 32 | 14 | 1032 |
| Patents By Year of Application: | 411 | 66 | 86 | 51 | 56 | 90 | 51 | 54 | 38 | 45 | 35 | 24 | 24 | 1 | 0 | 1032 |

BBC BROWN, BOVERI & COMPANY, LIMITED

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|---|---|---|---|---|---|---|---|------|
| Patents By Year of Grant: | 670 | 56 | 69 | 73 | 78 | 58 | 22 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1031 |
| Patents By Year of Application: | 778 | 87 | 64 | 72 | 23 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1031 |

KABUSHIKI KAISHA KOMATSU SEISAKUSHO

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 346 | 50 | 64 | 46 | 46 | 22 | 25 | 26 | 34 | 60 | 82 | 72 | 55 | 77 | 26 | 1031 |
| Patents By Year of Application: | 473 | 45 | 29 | 27 | 21 | 27 | 39 | 51 | 73 | 79 | 52 | 66 | 47 | 2 | 0 | 1031 |

CASIO COMPUTER CO. LTD.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 165 | 32 | 24 | 36 | 80 | 71 | 55 | 58 | 98 | 83 | 71 | 69 | 61 | 94 | 29 | 1026 |
| Patents By Year of Application: | 229 | 41 | 72 | 62 | 46 | 54 | 105 | 90 | 71 | 76 | 64 | 84 | 29 | 3 | 0 | 1026 |

STERLING DRUG INC.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|---|---|---|---|---|------|
| Patents By Year of Grant: | 808 | 34 | 40 | 18 | 15 | 8 | 27 | 21 | 15 | 22 | 6 | 3 | 0 | 1 | 0 | 1018 |
| Patents By Year of Application: | 878 | 22 | 20 | 11 | 10 | 12 | 24 | 24 | 16 | 0 | 0 | 0 | 1 | 0 | 0 | 1018 |

YAMAHA CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|---|---|---|---|----|----|-----|-----|-----|-----|-----|-----|-----|-----|----|------|
| Patents By Year of Grant: | 0 | 0 | 0 | 0 | 0 | 8 | 87 | 104 | 98 | 101 | 150 | 113 | 133 | 149 | 74 | 1017 |
| Patents By Year of Application: | 1 | 0 | 1 | 8 | 71 | 90 | 136 | 136 | 107 | 118 | 133 | 128 | 73 | 15 | 0 | 1017 |

ASEA AKTIEBOLAG

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|---|---|---|---|---|---|---|---|------|
| Patents By Year of Grant: | 790 | 44 | 53 | 42 | 41 | 22 | 18 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1013 |
| Patents By Year of Application: | 891 | 38 | 27 | 29 | 26 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1013 |

LICENTIA PATENT-VERWALTUNGS-GMBH

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|---|---|---|------|
| Patents By Year of Grant: | 756 | 43 | 34 | 16 | 30 | 24 | 23 | 26 | 10 | 11 | 12 | 7 | 8 | 9 | 4 | 1013 |
| Patents By Year of Application: | 840 | 16 | 22 | 28 | 19 | 22 | 18 | 9 | 9 | 10 | 5 | 11 | 4 | 0 | 0 | 1013 |

BELL + HOWELL COMPANY

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|---|----|----|----|----|---|---|---|---|---|------|
| Patents By Year of Grant: | 863 | 28 | 20 | 20 | 16 | 9 | 10 | 12 | 4 | 14 | 8 | 0 | 1 | 4 | 0 | 1009 |
| Patents By Year of Application: | 914 | 16 | 14 | 14 | 9 | 8 | 6 | 4 | 16 | 3 | 0 | 5 | 0 | 0 | 0 | 1009 |

NIPPON TELEGRAPH & TELEPHONE CORP.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| Patents By Year of Grant: | 372 | 31 | 54 | 46 | 33 | 47 | 46 | 41 | 42 | 48 | 54 | 47 | 53 | 61 | 34 | 1009 |
| Patents By Year of Application: | 464 | 39 | 39 | 39 | 34 | 51 | 34 | 49 | 49 | 52 | 51 | 68 | 37 | 3 | 0 | 1009 |

NORTH AMERICAN PHILIPS CORPORATION

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|-----|----|-----|----|----|----|----|----|---|------|
| Patents By Year of Grant: | 274 | 20 | 35 | 36 | 54 | 45 | 80 | 87 | 102 | 91 | 73 | 55 | 32 | 20 | 2 | 1006 |
| Patents By Year of Application: | 338 | 31 | 46 | 46 | 60 | 94 | 102 | 80 | 74 | 75 | 35 | 15 | 10 | 0 | 0 | 1006 |

---- Organizational Patenting

(Granted: Jan 01, 1969 - Jun 30, 1997) ---- Ranked List of Organizations with 1000 or More Patents ----

| | Pre 1984 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | TOTAL |
|--|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
|--|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|

MITA INDUSTRIAL COMPANY LTD.

| | | | | | | | | | | | | | | | | |
|---------------------------------|-----|----|----|----|----|----|----|-----|----|-----|-----|----|----|----|----|------|
| Patents By Year of Grant: | 128 | 34 | 42 | 43 | 41 | 30 | 46 | 50 | 84 | 97 | 120 | 93 | 82 | 86 | 29 | 1005 |
| Patents By Year of Application: | 204 | 32 | 40 | 36 | 43 | 42 | 81 | 109 | 92 | 110 | 93 | 65 | 52 | 6 | 0 | 1005 |

Other Organizations (154923)

| | | | | | | | | | | | | | | | | |
|---------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| Patents By Year of Grant: | 439602 | 29927 | 32555 | 32560 | 38459 | 36658 | 44830 | 42291 | 45483 | 46414 | 47255 | 49411 | 50076 | 55226 | 27216 | 1017963 |
| Patents By Year of Application: | 504616 | 30733 | 33133 | 35446 | 38588 | 42434 | 45212 | 46883 | 47063 | 49457 | 51717 | 53743 | 35341 | 3597 | 0 | 1017963 |